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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,394	11/10/2003	Warren M. Farnworth	2269-5558H US (99-0253.07	4404

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EXAMINER	
KOSOWSKI, ALEXANDER J	
ART UNIT	**PAPER NUMBER**
2125	

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/705,394	FARNWORTH, WARREN M.	
	Examiner	Art Unit	
	Alexander J. Kosowski	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/3/04,3/15/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1) Claims 1-36 are presented for examination.

Allowable Subject Matter

2) Claims 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4) Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. Referring to claim 1, the omitted elements are the means to perform the method steps (i.e. a computer or a controller and an imaging device). As currently claimed, claim 1 could be performed using a pencil and paper or in the mind of a user, which is not how the invention is taught in the specification. Claims 2-30 inherit the above rejection through dependency.

Claim Rejections - 35 USC § 102

5) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6) Claims 1-9, 23-28, 30-33 and 35 are rejected under 35 U.S.C. 102(e) as being unpatentable by Suh (U.S. PGPUB 2004/0251242).

Referring to claim 1, Suh teaches a method comprising viewing at least one location substantially at a consolidation elevation of a fabrication site of a programmable material consolidation apparatus (Paragraphs 0056 and 0066-0067 and Figure 5); evaluating data obtained from viewing the at least one location and determining an amount of adjustment to be made to at least one component of the programmable material consolidation apparatus (Paragraphs 0075-0076).

Referring to claim 2, Suh teaches that viewing is effected from above the consolidation elevation (Paragraphs 0056 and 0066-0067 and Figure 5).

Referring to claim 3, Suh teaches that viewing is effected substantially at the consolidation elevation (Paragraphs 0056 and 0066-0067 and Figure 5).

Referring to claim 4, Suh teaches that evaluating comprises comparing the data to at least one expected data value (Paragraph 0079).

Referring to claim 5, Suh teaches determining comprises determining that no adjustment of the at least one component need be made (Paragraph 0081, whereby adjustments are made only if the measured parameter is above or below the expected value).

Referring to claim 6, Suh teaches adjusting the at least one component by the amount of adjustment (Paragraphs 0075-0076).

Referring to claim 7, Suh teaches adjusting the at least one element of the programmable material consolidation apparatus by at least a portion of the amount of adjustment (Paragraph 0080).

Referring to claim 8, Suh teaches fabricating at least one feature substantially at the consolidation elevation (Paragraph 0056).

Referring to claim 9, Suh teaches that viewing comprises viewing the at least one feature (Paragraph 0056).

Referring to claim 23, Suh teaches directing selectively consolidating energy toward a plurality of locations of the consolidating elevation (Paragraph 0080, whereby the laser may traverse the specimen).

Referring to claim 24, Suh teaches that directing includes directing the selectively consolidating energy toward at least one location proximate a corner or an edge of a rectangular field of exposure at the consolidating elevation (Figure 2).

Referring to claim 25, Suh teaches at least some of the plurality of locations are in substantially linear alignment (Figure 2).

Referring to claim 26, Suh teaches that viewing comprises viewing actual locations of the consolidating elevation to which the selectively consolidating energy is directed (Paragraph 0056).

Referring to claim 27, Suh teaches placing at least one light sensitive element substantially at the consolidating elevation, the viewing being effected with the at least one light sensitive element (Paragraph 0056).

Referring to claim 28, Suh teaches that viewing is effected from above the consolidating elevation (Paragraph 0056 and Figure 5).

Referring to claim 30, Suh teaches adjusting a material consolidation element of the apparatus by at least a portion of the adjustment amount to increase a linearity of a path of consolidating energy generated by the material consolidation element (Paragraph 0080).

Referring to claim 31, Suh teaches a system comprising at least one imaging element (Paragraph 0056 and Figure 5); and a controller in communication with the at least one imaging element and programmable to effect at least one calibration program that facilitates adjustment of at least one feature of the programmable material consolidation apparatus to calibrate the same (Paragraphs 0075-0076 and 0085).

Referring to claim 32, Suh teaches that the at least one imaging element comprises a machine vision system associated with the programmable material consolidation apparatus (Paragraphs 0066-0068).

Referring to claim 33, Suh teaches that the at least one imaging element comprises at least one light sensitive element configured to be positioned at a location of the programmable material consolidation apparatus at which material consolidation is to occur (Paragraph 0056).

Referring to claim 35, Suh teaches a plurality of light sensitive elements (Paragraphs 0066-0068).

Claim Rejections - 35 USC § 103

7) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8) Claims 10-17, 19, 29, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Suh, further in view of Philippi et al (U.S. pat 6,483,596).

Referring to claims 10-14, Suh teaches the above. However, Suh does not explicitly teach that fabricating includes fabricating a plurality of reference pixels substantially at the consolidation elevation, that evaluating data comprises comparing actual locations of the plurality of reference pixels to anticipated locations for the plurality of reference pixels, nor adjusting reference grid data or that apparatus by at least a portion of the amount of adjustment.

Philippi teaches a material consolidation apparatus whereby reference pixels are created and compared to a reference grid and whereby the system is adjusted by the amount of adjustment required (col. 4 line 58 through col. 5 line 42).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to compare actual locations with anticipated locations of reference pixels and use the data to adjust the system in the method taught by Suh above since this would allow a conformity between a radiation coordinate system and a machine coordinate system to be obtained and used to calibrate the system in an absolute manner (Philipp, col. 5 lines 37-42).

Referring to claims 15-17 and 19, Suh teaches the above. However, Suh does not explicitly teach that viewing comprises moving a viewpoint substantially linearly from which viewing is effected along a path of a plurality of spaced apart reference pixels, each having a common, known dimension, positioning a calibration plate including the plurality of spaced apart reference pixels substantially at the consolidation elevation, nor determining a number of reference pixels viewed as the viewpoint is moved a particular distance.

Philippi teaches a material consolidation apparatus whereby a number of linear reference pixels are created and compared to a calibration plate comprising known dimensions and whereby the system is adjusted by the amount of adjustment required (col. 4 line 58 through col. 5 line 42).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a calibration plate and reference pixels to adjust the system taught by Suh above since this would allow a conformity between a radiation coordinate system and a machine coordinate system to be obtained and used to calibrate the system in an absolute manner (Philipp, col. 5 lines 37-42).

Referring to claims 29, 34 and 36, Suh teaches the above. However, Suh does not explicitly teach that evaluating data comprises comparing the actual locations to anticipated locations of the consolidating elevation where selectively consolidating energy was expected to be directed, that a light sensitive element is positioned at corners or edges of a field of exposure of the programmable material consolidation apparatus, nor that a calibration plate including reference features thereon, the calibration plate being configured for placement at a location of the programmable material consolidation apparatus at which material consolidation is to occur.

Philippi teaches a material consolidation apparatus whereby reference pixels are created and compared to a calibration plate utilizing a light sensitive element and whereby the system is adjusted by the amount of adjustment required (col. 4 line 58 through col. 5 line 42).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a calibration plate and light sensitive material to compare actual and expected consolidation energy and use the data to adjust the system taught by Suh above since

this would allow a conformity between a radiation coordinate system and a machine coordinate system to be obtained and used to calibrate the system in an absolute manner (Philipp, col. 5 lines 37-42).

9) Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suh, further in view of Philippi, further in view of Cohen (U.S. Pat 5,287,435).

Referring to claim 18, Suh and Philippi teach the above. However, they do not explicitly teach that viewing further comprises detecting transitions in contrast.

Cohen teaches a 3D modeling technique whereby variations in contrast can be detected (col. 15 lines 41-45).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to detect variations in contrast in the invention taught above since this would allow a camera to detect the solidifiable material from the support material and utilize the detected solidifiable material to compare the results to an original image (Cohen, col. 15 lines 40-66).

Conclusion

10) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 571-272-3744. The examiner can normally be reached on Monday through Friday, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. In addition, the examiner's RightFAX number is 571-273-3744.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Alexander J. Kosowski
Patent Examiner
Art Unit 2125

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100